

BARNES & THORNBURG

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group: Unknown }

Attorney }

Docket: 1039-68477 }

Applicant: Mango, III, et al. }

Invention: LOUDSPEAKER SPIDER, }

METHOD OF MAKING IT }

AND LOUDSPEAKER }

INCORPORATING IT }

Appl. No: Unknown }

Confirmation No.: Unknown }

Filed: Herewith (May 22, 2001) }

Examiner: Unknown }

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

BOX PATENT APPLICATION

Sir:

Preliminary to the examination of this application, please amend the application
as follows:

At page 1, before the first line please insert Field of the Invention---

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At page 1, please amend the paragraph beginning at line 6 and continuing through line 15 as follows:

--Background of the Invention

There are several proposals in the prior art to incorporate into the spiders of such loudspeakers the conductors to the loudspeaker voice coil. There are, for example, the disclosures of U.S. Patents: 1,906,066; 1,906,379; 1,907,687; 2,221,068; 2,538,621; 2,922,850; 3,014,996; 3,079,471; 4,313,040; 4,565,905; 5,008,945; and, 5,091,958: United Kingdom patent specifications 638,080 and 686,934: German patent specification 3,511,802: and Japanese patent applications: 59-259,547; 61-137,498; 62-155,851; 64-897; 1-295,599; 2-241,297; and, 3-208,497. This listing is not intended as an exhaustive listing of the prior art, nor as a representation that no more pertinent prior art exists, nor should any such representation be inferred.--;

At page 1, between the paragraph ending on line 22 and the paragraph beginning on line 23, please insert -Summary of the Invention-;

At page 3, between the paragraph ending on line 26 and the paragraph beginning on line 27, please insert -Brief Description of the Drawings-;

At page 4, after the paragraph ending on line 21 and before the paragraph beginning on line 22, please insert -Detailed Descriptions of Illustrative Embodiments--;

Please amend the paragraphs beginning at page 9, line 9 and continuing through page 10, line 15 as follows:

--The flexible conductors 66 are applied to individual parallel strands 60 as illustrated in Figs. 3a-b which may then be formed into twisted cord 62 as illustrated in Figs. 4a-b, and are an integral part of the warp or weft of the cloth and serve as substitutes for a shed or course of the normal yarn. In either of these embodiments, all of the conductors in each of the two paths are confined to a single shed or course 64 to facilitate connection to the voice coil and loudspeaker terminals. Weaving the flexible conductors 66 as part of the cloth is superior to adding the conductors in a later operation, because conductors 66 woven into the cloth are at the flex locus, rather than on the surface as in the case of conductors later stitched, adhered or otherwise applied to a cloth surface. The flexible foil conductors 66 are formed from very thin

conductive foil fabricated from copper, copper alloy, or silver plated copper alloy. Each of these conductors 66 is helically wrapped around a fiber core 68. The core 68 absorbs the physical stresses applied to the conductive assembly 62 and 65. The helical configuration of the conductors 66 permits the conductors 66 to withstand additional flexure without significantly stressing the conductors 66.

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The illustrated embodiments of the flexible conductive assemblies 62 and 65 contemplate seven conductive strands 60 laid in a single shed 64 (Figs. 3a-b) or twisted together (Figs. 4a-b) to form a conductive cord 62. The multiple strands provide the total conductivity needed to minimize heating of the conductive cord 62 or 65 due to power dissipation in the cord 62 or 65. The twisting together of the multiple strands further improves the flex life of the conductive assembly by increasing the length of conductive foil 66 per unit length of the conductive cord 62. Thus, the forces induced by flexure are distributed over a longer foil conductor 66, reducing the forces per unit length of foil conductors 66.

Because the conductive cord 62 is an integral component of the base cloth 70, it will tend to become saturated and coated with phenolic resin when the cloth 70 goes through the impregnation process. To maintain solderability of the foil conductors 66, and to retain the natural flexibility of the conductive cord 62 after the cloth 70 is impregnated with phenolic, the conductive cord 62 is coated with wax prior to weaving it into the cloth 70. This can be accomplished, for example, as the final in-line process in the fabrication of the conductive cord 62. This wax will be dissipated in the high temperature spider 40 molding process, leaving the conductive foil 66 ready for interconnection.

After the cloth 70 containing the foil conductors 66 is woven, it is impregnated with a thermosetting phenolic resin diluted with a solvent. The cloth 70 is then dried in a warm air oven to flash off the solvent, leaving a dry, tack free surface.--;

Please amend the paragraphs beginning at page 10, line 25 and continuing through page 11, line 27 as follows:

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--After the conductive adhesive 41 is applied to the wires 43, the spider 40 is positioned with the conductive cords 62 over the conductive adhesive 41. The conductive adhesive 41 forms a small conductive fillet between the voice coil wires 43 and the flexible